

TRENDS IN THE OHIO DAIRY INDUSTRY
DURING THE PERIOD, 1924 to 1944

by

V. C. Hendricks
and
J. I. Falconer

Department of Rural Economics & Rural Sociology
Mimeograph Bulletin No. 209

Ohio State University
and
The Ohio Agricultural Experiment Station

Columbus, Ohio
May, 1949

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TRENDS IN THE OHIO DAIRY INDUSTRY DURING THE PERIOD, 1924 TO 1944

INTRODUCTION

The dairy enterprise is an important component of Ohio's agriculture. During the period 1929 to 1947 the dairy enterprise accounted for over 26 per cent of Ohio's total gross cash income from the sale of agricultural commodities.

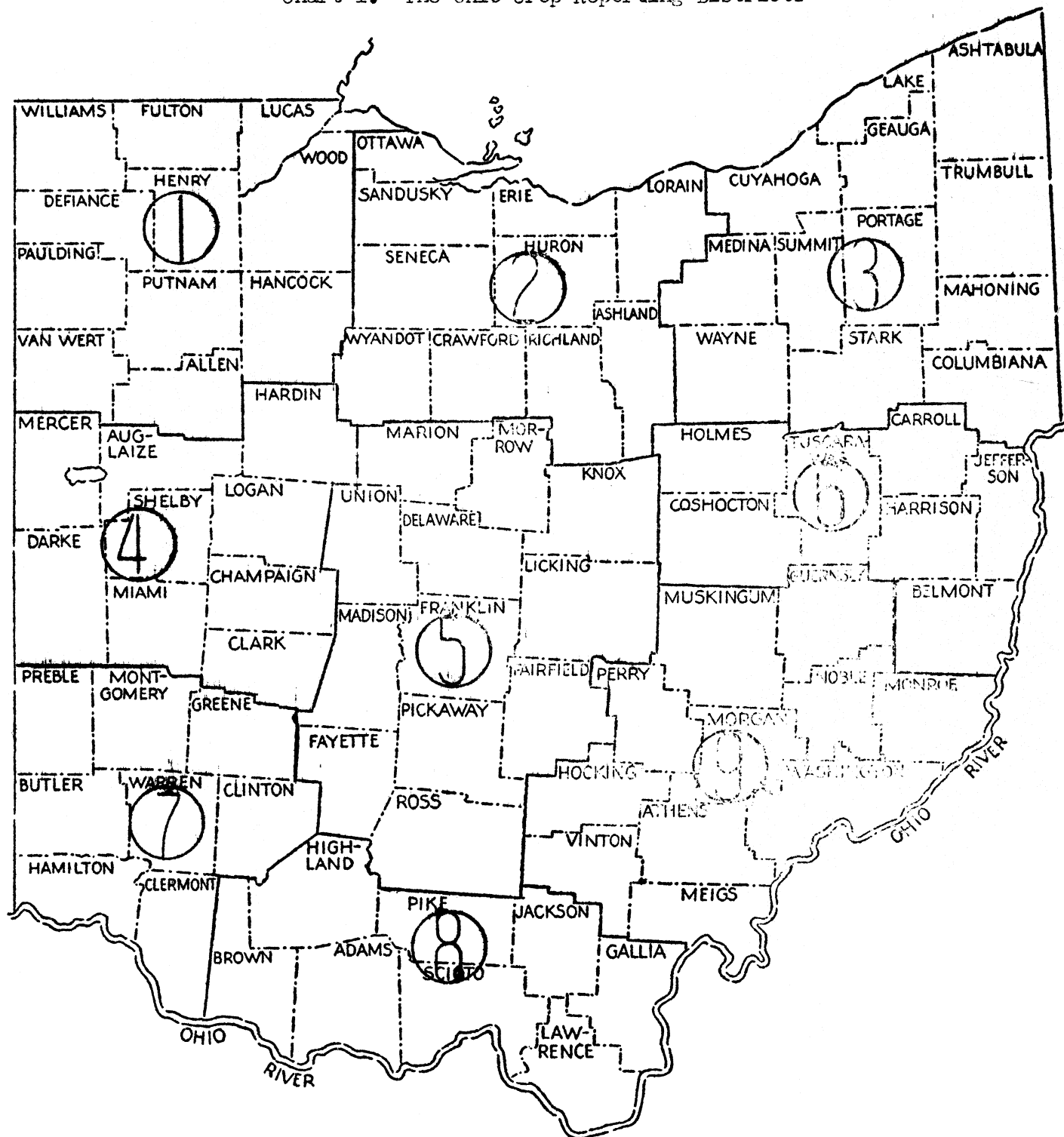
Furthermore, the importance of dairying in Ohio's agriculture is shown by the fact that, according to the United States Census of Agriculture of 1945, 62 per cent of Ohio's farms received income from the sale of dairy products, and cows were milked during the year on 77 per cent of the farms in Ohio.

The objectives of this bulletin were: (1) to indicate the trends in the Ohio dairy industry from 1924 to the most recent year for which data were available, usually 1944, and (2) to indicate what, if any, shifts occurred within the state during the same period.

To study the shifts occurring within the state, the data were broken down by crop reporting districts, as used by the Bureau of Agricultural Economics, of which there are nine in Ohio (see Chart 1).

The principle sources of data used in this study were the United States Census of Agriculture and publications by the Bureau of Agricultural Economics, United States Department of Agriculture and the Ohio Crop Reporting Service.

Chart 1. The Ohio Crop Reporting Districts



Source: United States Department of Agriculture

SECTION I

Number of Dairy Cattle

The trend in number of milk cows and heifers, two years old and older, on Ohio farms on January 1 of each year since 1924 has been upward. Table 1 and Chart 2 indicate a peak number occurred about every ten years and a low point followed the previous low in about ten years time. Each successive peak was higher than the previous peak and the same prevailed for the low points, indicating an upward trend, which is substantiated by the calculated straight line trend (T_1) shown in Chart 2.

The number of milk cows and heifers; two years old and over, was not available for each county, therefore, the United States Census item, "Number of Cows and Heifers Milked" was used to study county and district changes. This item included only those cows and heifers actually reported as having been milked any time during the year. Table 2, giving the number of cows and heifers milked by districts and for the entire state, indicates an increase of 4.5 per cent from 1924 to 1944 for Ohio. District 4 showed the greatest increase in number of cows and heifers milked (30.8 per cent) of all areas, while Districts 3 and 7 decreased. The remaining districts corresponded closely to the state in percentage increase.

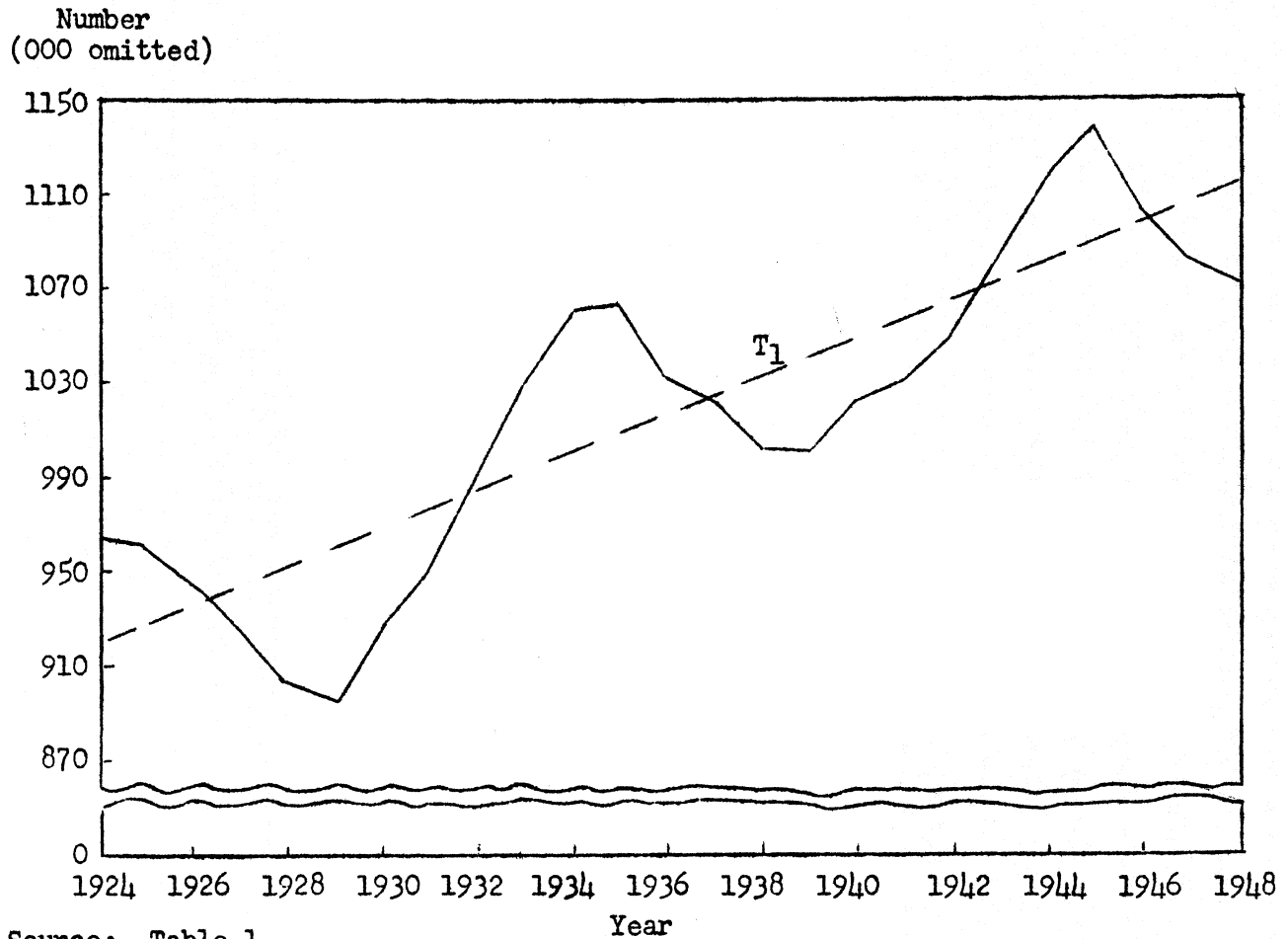
Table 1. Number of Milk Cows and Heifers, Two Years Old and Older, on Farms in Ohio, January, 1924-1948

(000 omitted)					
Year	Number	Year	Number	Year	Number
1924	964	1932	990	1940	1022
1925	962	1933	1030	1941	1032
1926	948	1934	1060	1942	1053
1927	928	1935	1065	1943	1085
1928	904	1936	1033	1944	1118
1929	895	1937	1022	1945	1138
1930	926	1938	1002	1946	1104
1931	950	1939	1018	1947	1082
				1948 ^{1/}	1071

^{1/} Preliminary

Source: Ohio Cooperative Crop Reporting Service

Chart 2. Number of Milk Cows and Heifers, Two Years Old and Older on Farms and the Straight Line Trend Fitted to the Annual Data by the Least Squares Method, Ohio, January 1, 1924-1948

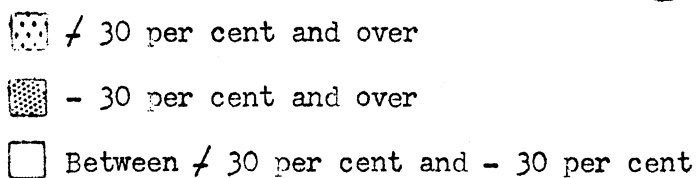


Source: Table 1

Table 2. Number of Cows and Heifers Milked, by Districts, Ohio Census Years 1924 to 1944

District	1924	1929	1934	1939	1944
1	113,081	104,472	126,564	111,359	119,183
2	100,157	93,570	110,428	102,154	104,022
3	179,438	149,802	176,084	167,395	166,499
4	101,593	102,216	127,698	119,859	132,925
5	124,396	117,457	141,833	132,797	135,084
6	70,995	66,488	83,706	75,067	80,360
7	93,139	83,633	97,270	84,641	86,306
8	60,176	53,395	63,931	55,492	60,338
9	88,742	77,145	96,774	84,053	88,643
The State	931,717	848,178	1,024,288	932,817	973,360

Source: The United States Census of Agriculture



Source: United States Census of Agriculture

Chart 3 presents the percentage change in the number of cows and heifers milked between 1924 and 1944 for each county. It will be noted that the majority of counties with a plus 30 per cent or over increase are located in District 4, while decreases took place in most of the counties in District 3. The greatest decreases were shown by the more highly populated counties.

Table 3. Percentage of the Cows and Heifers Milked Located in Individual Districts, Ohio, Census Years, 1924 - 1944

District	1924	1929	1934	1939	1944
1	12.1	12.3	12.4	11.9	12.2
2	10.8	11.0	10.8	11.0	10.7
3	19.3	17.7	17.2	17.9	17.1
4	10.9	12.1	12.5	12.9	13.7
5	13.3	13.8	13.8	14.2	13.9
6	7.6	7.8	8.2	8.0	8.3
7	10.0	9.9	9.5	9.1	8.9
8	6.5	6.3	6.2	6.0	6.2
9	9.5	9.1	9.4	9.0	9.1

Source: United States Census of Agriculture.

SECTION II

Number of Dairy Farms

Although the trend in number of dairy cattle in Ohio was upward during the period, 1924 to 1944, the trend in number of farms where cows were milked was downward. All districts declined about the same percentage from 1924 to 1944 in the number of dairy farms with the entire state decreasing 20.7 per cent (see Table 4).

The trend in the percentage of the total farms in the state that milked cows was downward from 1924 to 1944. In 1924, 87.8 per cent of the total Ohio farms milked cows, and in 1944 this had dropped to 77.3 per cent. District 3 was low area in percentage of its total farms where cows were milked, 87.6 per cent as compared to the state average of 77.3 per cent in 1944 (see Table 5).

Section I of this bulletin shows an upward trend in number of cows milked and the first part of this section indicates a downward trend in number of farms milking cows; from which the conclusion is reached that the trend in number of cows milked per farm was upward during the period studied. Data given in Tables 6 and 7 substantiate and give greater detail to the foregoing conclusion.

Table 4. Number of Farms Reporting Cows Milked by Districts, Ohio, Census Years, 1924 - 1944

District	1924	1929	1934	1939	1944
1	27,410	25,081	27,060	23,647	21,579
2	22,815	20,462	22,281	19,497	17,355
3	31,896	25,599	31,472	28,378	26,009
4	24,113	21,976	23,554	21,135	19,475
5	28,219	25,339	26,192	24,883	22,768
6	15,351	13,668	15,692	13,773	12,361
7	20,980	17,899	19,818	17,503	16,132
8	19,113	16,251	18,768	16,800	15,826
9	24,944	21,447	24,477	21,312	18,909
State	214,841	187,772	211,314	186,928	170,414

Source: United States Census of Agriculture.

Table 5. Percentage of the Total Farms That Milked Cows, by Districts, Ohio, Census Years, 1924 - 1944

District	1924	1929	1934	1939	1944
1	91.2	88.1	86.3	84.6	82.2
2	89.9	86.6	83.6	83.2	78.0
3	82.1	82.1	75.3	71.6	67.6
4	90.2	89.0	87.8	87.4	84.0
5	87.9	85.8	84.2	81.7	78.1
6	84.9	85.4	85.1	81.8	81.3
7	89.2	86.0	81.0	77.3	76.1
8	89.5	83.8	84.0	78.7	77.6
9	87.0	84.0	82.1	78.1	77.3
The state	87.8	85.6	82.8	80.0	77.3

Source: United States Census of Agriculture.

Table 6. Number of Cows and Heifers Milked Per Farm Reporting Cows Milked by Districts, Ohio, Census Years, 1924 - 1944

District	1924	1929	1934	1939	1944
1	4.1	4.2	4.7	4.7	5.5
2	4.4	4.6	5.0	5.2	6.0
3	5.6	5.9	5.6	5.9	6.4
4	4.2	4.7	5.4	5.7	6.8
5	4.4	4.6	5.0	5.3	5.9
6	4.6	4.9	5.3	5.5	6.5
7	4.4	4.7	4.9	4.8	5.3
8	3.1	3.3	3.4	3.3	3.8
9	3.6	3.6	4.0	3.9	4.7
The state	4.3	4.5	4.8	5.0	5.7

Source: United States Census of Agriculture.

Table 7. Percentage of the Total Cows Milked Distributed by Number Milked Per Farm in Ohio, by Districts, 1929 and 1939

District	<u>1-2 Cows</u>		<u>3-9 Cows</u>		<u>10-19 Cows</u>		<u>20 Cows & over</u>	
	1929	1939	1929	1939	1929	1939	1929	1939
1	11.0	8.2	76.8	73.3	10.6	14.7	1.6	3.8
2	9.7	7.5	68.4	62.4	17.6	23.6	4.3	6.5
3	7.9	9.0	46.9	39.7	33.7	37.3	11.5	14.0
4	9.0	5.7	70.6	63.6	15.5	22.8	4.9	7.9
5	11.1	8.9	61.6	53.0	21.5	27.9	5.8	10.2
6	10.0	8.5	59.9	52.3	25.3	32.6	4.8	6.6
7	10.3	11.2	64.0	55.6	19.2	23.4	6.5	9.8
8	23.3	23.8	62.1	55.7	10.6	14.0	4.0	6.5
9	18.8	16.1	65.1	61.8	13.5	17.9	2.6	4.2
The state	11.4	10.0	63.2	56.5	19.8	25.1	5.6	8.3

Source: United States Census of Agriculture.

Sufficient data were available to compute the percentages for the state in various sized herds for 1944, and the summary for the three years, 1929, 1939, and 1944, is as follows:

	<u>1929</u>	<u>1939</u>	<u>1944</u>
1-2 cows per farm	11.4	10.0	8.9
3-9 cows per farm	63.2	56.6	45.2
10-19 cows per farm	19.8	25.1	33.3
20+ cows per farm	5.6	8.3	12.6
Total	100.0%	100.0%	100.0%

SECTION III

Production of Milk

While the number of cows and heifers milked in Ohio increased 4.5 per cent from 1924 to 1944, the total pounds of milk produced increased 31.7 per cent. In the same period District 4 showed the greatest increase (about 86 per cent) as compared to only a 9.4 per cent increase in pounds produced in District 3.

Chart 4 gives greater detail to the percentage change in milk production in various parts of Ohio between 1924 and 1944.

Table 9 shows pounds of milk per cow milked. District 4 indicated the greatest increase in production per cow percentagewise (42.2), while District 3 increased the least in percentage of the nine districts (17.8) as compared to the state increase of 25.8 per cent between 1924 and 1944. It should be noted, however, that the production per cow was relatively high in District 3 in the base year, 1924.

Table 8. Pounds* of Milk Produced in Ohio by Districts, Census Years, 1919 - 1944

District	1919	1924	1929	1934	1939	1944
(Thousand pounds)						
1	373,512	458,889	498,972	496,512	511,105	585,663
2	311,472	408,289	438,547	434,816	483,881	548,507
3	741,171	882,000	815,530	847,238	900,210	965,192
4	272,507	351,339	446,948	475,530	540,586	653,513
5	356,227	455,413	514,506	520,544	601,066	668,432
6	214,360	261,493	302,528	310,873	333,509	379,690
7	302,735	355,528	381,880	376,734	394,667	426,522
8	159,246	192,346	203,344	188,236	203,595	245,189
9	260,450	296,877	303,148	298,122	305,342	349,885
State	2,991,680	3,662,174	3,905,404	3,948,605	4,273,960	4,822,593

* Conversion factor of 8.6 lb./gallon applied to gallons of milk produced.

Table 9. Pounds of Milk Produced Per Cow Milked, by Districts, Ohio, Census Years, 1924 - 1944

District	1924	1929	1934	1939	1944
1	4059	4773	3922	4592	4911
2	4076	4687	3939	4739	5272
3	4919	5444	4807	5375	5796
4	3457	4369	3724	4506	4919
5	3664	4377	3672	4524	4945
6	3681	4549	3715	4446	4721
7	3818	4567	3870	4661	4945
8	3199	3810	2941	3672	4068
9	3345	3930	3079	3629	3947
State average	3930	4601	3853	4584	4945

United States Census of Agriculture.

Some indication can be gathered as to the relative production per cow in the various sized herds, by comparing the percentages of the total cows in the various sized herds in the state or districts with the percentage of the total milk produced by correspondingly sized herds in the state or individual districts. Following is such a comparison for the state in the year 1944:

	Cows milked per farm				Total
	1 - 2	3 - 9	10 - 19	20 +	
Per cent of total cows	8.9	45.2	33.3	12.6	100.0
Per cent of milk produced	7.5	41.9	35.1	15.5	100.0

Further comparisons can be made for individual districts and years by comparing the data in Table 10 with that in Table 7 of this bulletin.

Table 10. Percentage of the Milk Produced Distributed by Number of Cows Milked Per Farm, By Districts, Ohio, 1929 and 1939

District	1-2 Cows		3-9 Cows		10-19 Cows		20 Cows & over	
	1929	1939	1929	1939	1929	1939	1929	1939
1	10.1	7.3	75.7	71.8	12.1	15.9	2.1	5.0
2	8.6	6.3	65.4	58.1	20.6	27.0	5.4	8.6
3	6.1	6.7	44.9	37.3	36.4	39.7	12.6	16.3
4	8.6	5.2	68.9	61.6	16.6	24.0	5.9	9.2
5	10.2	7.7	59.1	49.5	23.4	30.0	7.3	12.8
6	8.7	7.1	56.8	49.1	28.7	35.9	5.8	7.9
7	9.6	9.6	61.6	53.1	20.8	25.1	8.0	12.2
8	22.3	21.9	60.6	52.8	11.8	16.2	5.3	9.1
9	18.1	15.2	63.7	59.3	14.8	20.1	3.4	5.4
The state	10.0	8.3	60.6	53.3	22.5	27.9	6.9	10.5

Source: United States Census of Agriculture.

Table 3 of Section I gives the percentage of the cows and heifers milked in Ohio that are located in each district. Similar data for milk produced are given in Table 11.

Table 11. Percentage of the Milk Produced by Individual Districts, Ohio, Census Years, 1924 - 1944

District	1924	1929	1934	1939	1944
1	12.5	12.8	12.6	12.0	12.1
2	11.2	11.2	11.0	11.3	11.4
3	24.1	20.9	21.5	21.1	20.0
4	9.6	11.4	12.0	12.6	13.5
5	12.4	13.2	13.2	14.1	13.9
6	7.1	7.7	7.9	7.8	7.9
7	9.7	9.8	9.5	9.2	8.8
8	5.3	5.2	4.8	4.8	5.1
9	8.1	7.8	7.5	7.1	7.3

Source: United States Census of Agriculture.

SECTION IV

Farm Disposition of Milk

The changes in disposition of the milk produced on Ohio farms since 1924 are very evident in Table 12. The percentage of the total milk produced that was sold as wholesale milk by farmers increased from 32 per cent in 1924 to 74 per cent in 1947. All other modes of disposition decreased in percentage during this period, including the milk used on the farms.

Table 12. Percentage Disposition of Milk Produced on Farms, Ohio, 1924 - 1947

Year	Used on farms	<u>Sold wholesale</u>		Retail sales of milk and cream by farmers	Farm churned butter sold
		As cream	As milk		
1924	23	31	32	9	5
1925	22	29	36	9	4
1926	22	29	36	9	4
1927	20	29	38	9	4
1928	20	28	39	9	4
1929	19	29	40	9	3
1930	19	27	42	9	3
1931	20	27	41	9	3
1932	20	27	41	9	3
1933	20	28	40	9	3
1934	20	27	41	9	3
1935	19	27	43	9	2
1936	18	25	47	8	2
1937	17	22	52	8	1
1938	17	21	54	7	1
1939	17	21	54	7	1
1940	17	19	57	6	1
1941	16	17	60	6	1
1942	14	14	66	5	1
1943	14	14	66	5	1
1944	14	12	69	5	$\frac{a}{a/}$
1945	12	10	73	5	$\frac{a}{a/}$
1946	13	9	74	4	$\frac{a}{a/}$
1947 <u>b/</u>	13	9	74	4	$\frac{a}{a/}$

a/ Less than $\frac{1}{2}$ of one per cent

b/ Preliminary

Source: United States Department of Agriculture, Bureau of Agricultural Economics, "Ohio Monthly Dairy Report," July 1948, Page 8.

Table 13 shows the percentages of the number of farms milking cows that sold whole milk, cream or butter by districts. The percentage of the farms milking cows that sold whole milk increased, while the percentage of the farms selling butter and cream decreased. The percentage of the farms milking cows selling milk, cream and butter combined were less in 1944 than in 1929 or 1939; indicating a greater per cent of the farms in 1944 used all the milk they produced. In contrast to this, Table 14 shows a decrease in the percentage of milk produced that was used on farms. A possible solution to this contradiction might be that the small one, two or three-cow farms stopped selling cream or butter and used all of their production on the farm; this would have tended to lower the per cent of farms selling milk, cream and butter, but the relatively small production of these farms would have little effect upon the disposition percentages.

Another factor adding to the above conclusion might have been the shift to larger specialized farms which sold most of their milk and purchased butter and cream, thus a decrease in production on smaller self-sufficient farms, which formerly sold their small surplus.

Table 13. Percentage of the Farms Milking Cows That Sold Whole Milk, Cream, and Butter, by Districts, Ohio, 1929, 1939 and 1944

District	Whole milk			Cream			Butter		
	1929	1939	1944	1929	1939	1944	1929	1939	1944
1	43.3	53.1	73.5	45.6	36.9	17.8	4.0	2.0	0.4
2	27.4	43.1	57.2	55.7	40.7	25.5	7.7	3.9	1.1
3	57.1	53.1	53.1	11.6	11.9	7.6	15.3	8.3	3.6
4	32.3	57.9	76.2	59.9	35.4	13.6	3.3	1.2	0.5
5	33.7	39.7	52.6	49.0	41.1	26.7	6.8	3.4	1.0
6	30.2	43.1	54.2	46.3	32.7	21.9	17.6	7.7	3.1
7	44.6	44.8	52.7	36.7	29.4	19.3	10.6	6.4	1.4
8	12.9	17.2	24.1	59.2	44.9	39.9	9.4	3.8	1.6
9	13.6	18.5	33.7	59.9	54.0	41.0	12.6	4.4	2.0
The State	34.0	42.1	53.9	46.2	35.5	22.8	9.3	4.5	1.6

Source: United States Census of Agriculture.

Table 14. Percentage of the Farms Milking Cows That Sold Either Whole Milk, Cream or Butter, by Districts, Ohio, 1929, 1939 and 1944

District	1929	1939	1944
1	92.9	92.0	91.7
2	90.8	87.7	83.8
3	84.0	73.3	64.3
4	95.5	94.5	90.3
5	89.5	84.2	80.3
6	94.1	83.5	79.2
7	91.9	80.6	73.4
8	81.5	65.9	65.6
9	86.1	76.9	76.7
The State	89.5	82.1	78.3

Source: Table 13

SECTION V

Utilization of Milk for Manufactured Products

In Section IV the methods of farm disposal of milk were discussed. The use made of the milk being sold off the farm as wholesale cream and milk was the preliminary objective of this section. Some data were available on the whole milk equivalents of dairy products manufactured in Ohio, however, due to interstate shipments the milk equivalent of products manufactured in Ohio does not necessarily show utilization of the milk produced. Due to lack of sufficient data, no attempt was made to determine the amount of Ohio milk going into fluid milk and cream.

Table 15 gives the percentage of milk used for manufactured products that went into various products each year from 1928 to 1946. This may serve to give some indication of the utilization of Ohio milk for various products, but, as stated before, interstate shipments may have altered the true values somewhat.

Table 15. Percentage Utilization of the Whole Milk Used For Manufactured Dairy Products, Ohio, 1928 - 1946

Year	Creamery butter	American cheese	Other cheese	Condensed milk		Evaporated milk	Ice cream	Other products
				Sweetened	Unsweetened			
1928	77.9	0.5	1.2	0.2	0.5	7.4	12.3	
1929	77.7	0.6	0.7	0.3	0.6	8.5	11.6	
1930	78.9	0.5	0.7	0.2	0.6	7.9	11.2	
1931	79.9	0.6	1.8	0.7	0.2	7.6	9.2	
1932	80.2	0.7	2.2	0.7	0.2	9.0	7.0	
1933	79.3	1.0	2.6	0.6	0.1	9.2	7.2	
1934	74.1	1.4	3.0	0.6	0.1	12.1	8.7	
1935	70.8	3.2	2.7	0.6	0.1	13.9	8.7	
1936	66.2	4.0	2.6	0.5	0.4	15.7	10.6	
1937	62.8	4.4	2.6	0.5	0.5	17.7	11.5	
1938	62.8	4.5	2.6	0.5	0.3	18.2	10.5	0.6
1939	62.0	4.4	2.8	0.4	0.4	17.7	11.1	1.2
1940	58.1	4.7	3.1	0.5	0.4	20.4	11.3	1.5
1941	49.7	5.8	3.4	0.7	0.4	24.9	13.1	2.0
1942	42.3	8.2	2.8	0.9	0.5	29.5	13.7	2.1
1943	52.3	5.6	2.9	0.2	0.4	25.1	10.5	3.0
1944	49.3	6.5	2.8	0.5	0.9	25.4	10.1	4.5
1945	45.2	7.3	2.9	0.6	0.8	26.7	11.7	4.8
1946	39.8	7.0	3.1	0.6	0.6	23.9	19.8	5.2

Source: United States Department of Agriculture, Bureau of Agricultural Economics Publication, "Production of Manufactured Dairy Products," 1928-1946.

